PORT AUTHORITY OF NY & NJ Memorandum

To: Stanley Brezenoff, Executive Director
From: Charles Maikish
Date: August 25, 1992

Subject: **UTILIZATION OF ASBESTOS CONTROL SERVICES (ACS) FOR EMERGENCY ASBESTOS ABATEMENT OF ELEVATOR SHAFTS 12A & 13A (ONE WTC)**

Copy To: R. DiChiara, E. Fasullo, J. Green, W. Goldstein, M. Kirshner, M. Pachter, R. Peduto, A. Shorris

We will be engaging Asbestos Control Services (ACS) to remove asbestos fireproofing from the shuttle elevator shaft for cars 12A and 13A, which serve the 78th floor skylobby in One World Trade Center. This abatement is required on an emergency basis and will be performed under the existing call-in contract with ACS on a T&M (time and materials) basis. The estimated cost of this abatement is $1.5 million, which can be absorbed within the existing $6.57 million contract with ACS.

The frequency and magnitude of the asbestos fallout in this particular elevator shaft (described below) indicates that despite our best efforts, interim shutdown, cleanup and inspection measures will not be adequate. Immediate abatement is necessary to minimize exposure of tenants and employees to asbestos-containing material (ACM), and to restore reliable elevator service as soon as possible to our third zone tenants. Due to both the difficult and emergency nature of this abatement project, ACS is the only contractor that would be able to complete the work in a timely and satisfactory manner. The World Trade, Engineering, and Law Departments, and the Asbestos Control Program, are all in accord with undertaking this effort. By acting promptly, we may be able to complete this job by the end of the year.

Background

As you know, since February 1992, the fireproofing in the shuttle elevator shafts to the 44th and 78th floor skylobbies has been delaminating at an increased rate. Attached is a memorandum which Joe Vanacore and I sent to you in May, describing the extent of asbestos containing material (ACM) in the elevator shafts and the conditions which can cause delamination. We have also discussed this problem with you in great detail. There have been numerous incidents in the past few months involving varying degrees of fallout of both asbestos and non-asbestos fireproofing in the shuttle elevator shafts.

Over the last two weeks, there have been at least five occurrences of asbestos fallout in the same elevator shaft, which contains elevators 12A and 13A in One World Trade Center. In the latest incident on the morning of August 10th, asbestos debris not only fell on top of the elevator car, but also fell out into the ground floor lobby. ACM debris was found spread over a 10 by 15 foot area in the main lobby (see photos attached). Asbestos Control Services made an emergency cleanup response, and fortunately the air samples collected and analyzed did not indicate fiber counts in excess of federal environmental guidelines.

However, because of the apparent rapid and continuing deterioration of the ACM fireproofing in this shaft, a full abatement of the shaft should be initiated as soon as practical. The Engineering Department and the Asbestos Control Program support this assessment. Stephen Hays, an asbestos expert who participated in the recent Value Planning session on elevator modernization, stated that complete removal of ACM in the elevator shafts is clearly the most preferable permanent solution to the problem. Unlike enclosure or encapsulation, which Hays characterized as uncertain and risky measures in an elevator shaft, removal eliminates the risk of harmful exposure to tenants, visitors, contractors and employees. From a long term perspective, removal is also the least costly and disruptive alternative.

As indicated in the May memo, our discussions with outside environmental and engineering consultants revealed that there was virtually no industry experience in removing asbestos containing material on structural steel in high-rise elevator shafts. Working with ACS, staff collaborated in the development of a prototype tent-like enclosed structure, built atop an elevator car, to serve as a contained work area during the removal process. This prototype method of abatement was tested in a non-ACM shaft and appears to be successful. All tests and procedures associated with this pilot project were reviewed and analyzed, and proved that our new methodology was both safe and efficient. As a next step, we had planned to conduct further work using these designs and procedures in a mixed shaft (i.e., where ACM fireproofing is present only in the lower portion of the shaft). However, the worsening condition of ACM fireproofing in the 12A/13A shaft now dictates that we proceed with the "tent" removal method in a 100% ACM shaft. Advancing the test program into a full-ACM shaft entails only some minor adjustments, and does not represent any great leap forward from our previous plans.

ACS has performed excellently on the prototype project, as well on other asbestos related work at the World Trade Center and other Port Authority facilities. ACS' experience and familiarity with this new asbestos removal method in particular, and the World Trade Center in general, is essential to accomplish this work

expeditiously and safely. While another contractor may be able to perform the removal using the new method, the learning curve involved would be unacceptable in these emergency circumstances. We will be reviewing our project design and procedures during the course of this work, and will concurrently develop a contract for abatement work in other elevator shafts. We intend to competitively bid and award contracts for future non-emergency abatement work.

Based upon the prototype project, staff estimates this abatement will require 170 work shifts, at a cost of approximately $1.5 million. At a maximum rate of two shifts per day, we could complete work by the end of the year. To further accelerate the work schedule and minimize tenant inconvenience, we may implement a seven-day week work routine, which would increase the contract estimate to approximately $1.75 million due to premium payments for weekend work.

Conclusion

As this series of fallouts in the same shaft shows, once delamination occurs, further incidences can follow in rapid succession. Particularly since this is a 100% ACM shaft, complete removal of the asbestos fireproofing is the best solution, both technically and financially. ACS' knowledge and experience currently renders them the only contractor capable of completing the work by the end of the year. Delays in commencing this work would increase the risk of exposure to ACM and prolong the elevator shutdowns. With the support of the Law and Engineering Departments, and the Asbestos Control Program, we expect to mobilize the contractor immediately, with actual work to begin soon thereafter.

Atts.

Prepared by: W. Wong, ext. 2672

Reviewed by: F. Boyce, R. Cronin, R. DiChiara, R. Peduto, A. Raiola

THE PORT AUTHORITY OF NY & NJ — Memorandum

TO: Stanley Brezenoff, Executive Director
FROM: Charles J. Maikish and Joseph L. Vinacore
DATE: May 5, 1992
SUBJECT: ELEVATOR SHAFT ASBESTOS MANAGEMENT

COPY TO: F. Boyce, R. Cronin, R. DiChiara, E. Fasullo, J. Green, M. Kirshner, M. Pachter, R. Peduto, A. Preschle, A. Shorris, C. Shuchman

Recently, the fireproofing in certain World Trade Center elevator shafts has become of greater concern. This memorandum provides background information on the location and condition of asbestos fireproofing in elevator shafts, and describes measures being taken to minimize exposure to the material by our tenants, visitors, contractors, and employees. It also describes our research efforts and immediate plans for managing the concerns associated with the material.

Background

The asbestos and non-asbestos fireproofing in some of the shuttle elevator shafts to the 44th and 78th floor skylobbies is delaminating at an increased rate. Delamination is attributed to unusual conditions prevalent in these shuttle shafts, but not common in any of the local car shafts. Shuttle elevator shafts and fireproofing can be damaged in a number of ways including elevator cables which may hit the fireproofing as the buildings sway in high winds, internal wind conditions created by the "stack effect" in the shafts when the outside air is very cold or temperatures drop rapidly, piston-like pressure caused by the elevators operating at high speeds or in tandem and water damage caused by water leaks.

As a result of this delamination, there has been some fallout of asbestos fireproofing. This may cause exposure to car occupants and mechanical damage to elevators. A related problem caused by delamination is the loss of fire protection for the structural steel.

There is asbestos fireproofing in all or part of thirty-one (31) of the forty (40) elevator shafts in One World Trade Center. Fifteen (15) of the forty (40) elevator shafts in Two World Trade Center have asbestos fireproofing in all or part of them. In Four World Trade Center, all shafts have tested negative, and in Five World Trade Center, asbestos is contained in some troweled-on material in one shaft. The two parking lot elevator shafts have also tested negative.

Search for a Long-Term Solution

There is virtually no experience in the asbestos abatement industry for successfully dealing with asbestos removal or containment in elevator shafts within large, high-rise, operating, commercial buildings. Two years ago, we initiated two projects with the assistance of the Engineering Department. In the first effort, preliminary designs and specifications were prepared to remove asbestos from one shaft on a test basis. The cost of total asbestos removal and re-fireproofing was estimated to be $2.5 million for a shuttle car shaft with two elevators servicing the 44th floor Skylobby. In a second effort, ten floors of fireproofing were enclosed with test materials which included gypsum board, sheet metal, and two kinds of fiber glass. We have been observing this installation and it is holding up well. Due to the current regulatory requirements controlling the installation of enclosure systems, this approach may be as expensive as complete removal and re-fireproofing. Encasement, in contrast to removal, requires increased monitoring and surveillance, possible cleaning and maintenance, and ultimately removal of the asbestos if the shafts require major rehabilitation. These two efforts are currently on hold pending further tests.

We are developing the design for a tent-like structure on the top of the elevators to enclose the work area and maintain negative air pressure to control and contain any dust. This method may be utilized for the removal of loose asbestos fireproofing, the application of new fireproofing in asbestos shafts, the encapsulation or enclosure of asbestos which is in acceptable condition, or the complete removal of asbestos from the shafts. If the tent method can be developed, removal and repair will proceed and staff will evaluate the costs and benefits of each approach.

In addition, we tested the use of a high efficiency particulate (HEPA) air filter on an elevator car's ventilation system which has been unsuccessful to date.

We have also conducted preliminary tests of a spray-on encapsulant with favorable results. The material has not yet been approved for use in New York City so further testing is on hold.

Immediate Actions

Several new maintenance and operating procedures have been established to minimize the risk of exposure. The immediate maintenance and capital improvements include:

(1) The elevator controls are being rewired to eliminate the possibility of two cars running tandem. This condition may disturb the fireproofing, create a wind noise and give a perception of higher than normal speeds to occupants of the cars.

(2) Under the recently authorized Elevator Work Order contract, Otis is installing wind sway cable followers on 50% of the high rise elevators which do not have them. This will reduce some of the damage caused by cable impact, as well as enable us to run more elevators during wind storms.

(3) We are planning to remove and replace loose non-asbestos fireproofing material. This will reduce the incidence of non-asbestos fallout.

The new operating procedures include:

(1) All shuttle elevator cars and shafts have been thoroughly inspected. The cars have been cleaned and the elevator shafts have been cleaned as needed. An intensified inspection cycle will be held every two months or after a wind storm and/or rapid temperature change, whichever occurs first. All debris on or in the elevator cars and in the elevator pits is cleaned by qualified personnel under the supervision of the Asbestos Management Division.

(2) The Asbestos Management Division recently completed inspections of the local elevator shafts in Zones I and II in One and Two World Trade Center and no unusual conditions were found. Some elevator shafts and cars will require cleaning. Presently, inspections are being conducted on freight car shafts and elevators.

(3) Upon notification of an unusual ride and/or an observed dust condition in the car, cars are immediately removed from service. These cars are immediately inspected, air monitored and cleaned if necessary, by qualified personnel under the supervision of the Asbestos Management Division. To the extent feasible, the names of the occupants are taken, and they are contacted by staff and advised of possible exposure to asbestos. In the event of possible exposure, they are also offered medical checkups to establish their baseline health conditions.

(4) Periodic air samples are being taken during routine elevator operations. As of this date, air readings have been well within established guidelines for safe occupancy.

The operating conditions will be further modified based on experience and as conditions warrant.

Conclusion

Removal or enclosure of asbestos fireproofing poses major challenges related to the safety precautions which must be taken to protect the workers and prevent the contamination of other areas of the building. World Trade Department staff with assistance from the Engineering Department, the Asbestos Management Division, the Law Department and the Office of Asbestos Control are continuing to give this project a high priority.